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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Koichi MARUYAMA

Group Art Unit: 2872

Appln. No. : 09/918,440

Examiner: A. V. Amari

Filed : August 1, 2001

For : OBJECTIVE LENS FOR OPTICAL PICK-UP

APPEAL BRIEF UNDER 37 C.F.R. §1.192

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

Sir:

This appeal is from the Examiner's final rejection of claims 1-12, as set forth in the Final Official Action of September 20, 2002 and as reiterated in the Advisory Action dated April 2, 2003.

A Notice of Appeal in response to the Final Official Action of September 20, 2002 was filed on March 19, 2003. The two-month statutory period for response was set to expire on May 19, 2003. Further, the instant Appeal Brief is being submitted in triplicate pursuant to 37 C.F.R. §1.192(a), together with a check including the requisite fee under 37 C.F.R. §1.17(c) in the amount of $320.00 for the filing of the Appeal Brief.

However, if for any reason the necessary fee is inadequate or is not associated with this file, the Commissioner is authorized to charge the fee for the Appeal Brief and any necessary extension of time fees to Deposit Account No. 19-0089.

Appellant respectfully requests that the Examiner's Final Rejection be reversed and that the application be returned to the Examining Group for allowance.

(1) REAL PARTY IN INTEREST

The real party in interest is Pentax Corporation, formerly known as Asahi Kogaku Kogyo Kabushiki Kaisha, as established by an assignment recorded in the U.S. Patent and Trademark Office on August 1, 2001 at Reel 012045, Frame 0316.

(2) RELATED APPEALS AND INTERFERENCES

Appellant is presently not aware of any other appeals and/or interferences which will directly affect or be affected by or have a bearing on the Board's decision in the present Appeal.

(3) STATUS OF THE CLAIMS

Claims 1-12, the only claims pending in the instant application, stand finally rejected.

Claims 1, 2, 6-8 and 10 stand finally rejected under 35 U.S.C. §102(b) as being anticipated by BROOME et al. (U.S. Patent No. 6,088,322).

Claims 3, 4, 11 and 12 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over BROOME et al. (U.S. Patent No. 6,043,912).

Claims 1, 2 and 5-10 stand finally rejected under 35 U.S.C. § 102(b) as being anticipated by YOO et al.

Claims 3, 4, 11 and 12 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over YOO et al.

(4) STATUS OF THE AMENDMENTS

A Request for Reconsideration Under 37 C.F.R. §1.116 was filed March 19, 2003. No amendments were filed under 37 C.F.R. §1.116 after the Examiner's final rejection of the claims by the Official Action of September 20, 2002.

(5) SUMMARY OF THE INVENTION

The instant invention is directed to an objective lens for an optical pick-up. As shown in Figures 1A-1C, the objective lens 10 has an aspherical surface 11. The aspherical surface 11 is divided into an inside area R_{in} which functions as an effective area of the lens, and an outside area R_{out} which is outside the perimeter of the effective area of the objective lens. A diffraction lens structure is formed on the aspherical surface 11 within the effective area (Specification Page 8, lines 7-13).

The objective lens is configured to be used in an optical pick-up for optical disks of various formats, such as, e.g, CD, CD-R and DVD. In furtherance of this purpose, the inside area R_{in} is divided into a common area RC and an exclusive area RE. The common area RC converges a light beam at a low NA which is necessary and sufficient for an optical disk

having a low recording density, such as a CD or a CD-R. Both the common area RC as well as the high NA exclusive area RE converge a light beam at a high NA which is necessary for an optical disk having a high recording density, such as a DVD (Specification Page 8, lines 14-25). As an example, the common area RC is within a circle at which a light beam whose NA is .45-.50 passes and the high NA exclusive area RE, which is outside of the common area RC, is inside a circle at which a light beam whose NA is about .60 passes (Specification Page 9, lines 1-7).

The outside area R_{out} is configured as a continuous surface (i.e., without steps) and continuously connects with (i.e. is an extension of) a macroscopic base curve of the outer portion of the effective area R_{in} as indicated by the dashed lines in Fig. 1C. As a result of this configuration, a gap in the spherical aberration is generated between a light beam passing through the inside area R_{in} and a light beam passing through the outside area R_{out} In particular, the gap of the spherical aberrations can be set to be about 10 micrometers, for example, so that the light beam passing through the outside area R_{out} is diffused while a beam spot is formed by the light beam passing through the inside area R_{in} (Specification Page 9, lines 8-19). Because the outer area R_{out} is connected with a base curve of the effective area so that light passing through the outer area is diffused, the objective lens provides a limiting numerical aperture of a predetermined value such as, for example, NA=0.60. Accordingly, when using the objective lens of the present invention in an optical pick-up, it is unnecessary

to employ an aperture stop member in the optical pick-up because the structure of the lens itself provides a limitation on the numerical aperture.

(6) **ISSUES**

Whether Claims 1, 2, 6-8 and 10 are Improperly Rejected Under 35 U.S.C. 102(b) over BROOME et al. (U.S. Patent No. 6,088,322). Whether BROOME et al. contains any teaching anticipating an objective lens including, in the claimed combination, an aspherical surface divided into an effective area and an outer area outside the effective area, and a diffraction lens structure formed on the aspherical surface within the effective area. Whether BROOME et al. contains any teaching anticipating an objective lens including, in the claimed combination, an aspherical surface divided into an effective area and an outer area outside the effective area, the effective area and the outer area being formed such that a light beam passed through the effective area forms a beam spot on a predetermined surface, and a light beam passed through the outer area diffuses on the predetermined surface. Whether BROOME et al. contains any teaching anticipating an objective lens including, in the claimed combination, an aspherical surface divided into an effective area and an outer area outside the effective area, the effective area and the outer area being formed such that a predetermined gap is caused between a spherical aberration of a light beam passed through the effective area and a spherical aberration of a light beam passed through the outer area.

Whether Claims 3, 4, 11 and 12 are Improperly Rejected Under 35 U.S.C. 103(a) BROOME et al. (U.S. Patent No. 6,088,322). Whether it would have been obvious to one of ordinary skill in the art to provide a gap having an absolute value of at least equal to 10 micrometers, or approximately 200 micrometers, between a spherical aberration of a light beam passed through an effective area and a spherical aberration of a light beam passed through an outer area, in the system disclosed in BROOME et al.

Whether Claims 1, 2 and 5-10 are Improperly Rejected Under 35 U.S.C. 102(b) over YOO et al. (U.S. Patent No. 6,043,912). Whether YOO et al. contains any teaching anticipating an objective lens including, in the claimed combination, an aspherical surface divided into an effective area and an outer area outside the effective area, and a diffraction lens structure formed on the aspherical surface within the effective area. Whether YOO et al. contains any teaching anticipating an objective lens including, in the claimed combination, an aspherical surface divided into an effective area and an outer area outside the effective area, the effective area and the outer area being formed such that a light beam passed through the effective area forms a beam spot on a predetermined surface, and a light beam passed through the outer area diffuses on the predetermined surface. Whether YOO et al. contains any teaching anticipating an objective lens including, in the claimed combination, an aspherical surface divided into an effective area and an outer area outside the effective area, the effective area and the outer area being formed such that a predetermined gap is caused

between a spherical aberration of a light beam passed through the effective area and a spherical aberration of a light beam passed through the outer area.

Whether Claims 3, 4, 11 and 12 are Improperly Rejected Under 35 U.S.C. 103(a) YOO et al. (U.S. Patent No. 6,043,912). Whether it would have been obvious to one of ordinary skill in the art to provide a gap having an absolute value of at least equal to 10 micrometers, or approximately 200 micrometers, between a spherical aberration of a light beam passed through an effective area and a spherical aberration of a light beam passed through an outer area, in the system disclosed in YOO et al.

(7) **GROUPING OF CLAIMS**

For the purpose of this appeal, Appellant submits that none of the claims stand or fall together. Therefore, each of claims 1-12 are separately patentable for the reasons set forth hereinbelow.

(8) **ARGUMENT**

The rejection of claims 1, 2, 6-8 and 10 Under 35 U.S.C. §102(b) over BROOME et al. (U.S. Patent No. 6,088,322) is Improper, thus the Decision to Reject Claims 1, 2, 6-8 and 10 on this Ground Should be Reversed, and the Application Should be Remanded to the Examiner for allowance.

In the Final Official Action of September 20, 2002, the Examiner rejected claims 1, 2, 6-8 and 10 under 35 U.S.C. §102(b) over BROOME et al.

Each of independent claims 1, 6 and 7 sets forth an objective lens which includes *an aspherical surface having a diffraction lens structure formed thereon.* For instance, claim 1 recites, inter alia, "at least one surface of said objective lens being an aspherical surface, said at least one surface being divided into an effective area and an outer area outside said effective area, . . . a diffraction lens structure being formed on said at least one surface within said effective area"; claim 6 recites, inter alia, "at least one surface of said objective lens being an aspherical surface, said at least one surface being divided into an effective area and an outer area outside said effective area, a diffraction lens structure being formed on said at least one surface within said effective area"; and claim 7 recites, inter alia, "at least one surface of said objective lens comprising an aspherical surface, said at least one surface being divided into an effective area and an outer area outside said effective area, said at least one surface within said effective area comprising a diffraction lens structure".

Appellant submits that BROOME et al. lacks any disclosure of *an aspherical surface having a diffraction lens structure formed thereon.*

Appellant submits that the Examiner has misinterpreted the teachings of BROOME et al. The embodiment depicted in Figure 5 of BROOME et al., which does indeed include an objective lens with two aspherical surfaces 21 and 22, as noted by the Examiner, does not include a diffraction lens structure on either surface of the objective

lens. Rather, the embodiment of Figure 5 uses the aspherical shapes of the two aspherical surfaces 21 and 22 to compensate for the different wavelengths of light, and different thicknesses of cover layers, used for the CD and DVD format disks. Note column 4, line 1 through column 5, line 30.

The preferred embodiment of BROOME et al., which is depicted in Figures 8 and 12, provides a diffraction lens structure (i.e. a diffractive surface) to compensate for the different wavelengths of light, and different thicknesses of cover layers, used for the CD and DVD format disks. Note column 5, lines 32-42. However, BROOME et al. only discloses providing such a diffraction lens structure on a spherical surface 122 of an objective lens. Note column 5, lines 43-49 and column 6, lines 56 and 57. BROOME et al. explains at column 5, lines 47-49, that there is no need to provide the diffraction lens structure on an aspherical surface in their system, since the diffractive lens surface itself provides aspheric correction of spherical aberration. In other words, in BROOME et al., utilization of a diffractive surface and of an aspheric surface are mutually exclusive, as set forth at col. 5, lines 35 and 39.

Accordingly, Appellant submits that BROOME et al. lacks any disclosure of *an aspherical surface having a diffraction lens structure formed thereon*, and that therefore BROOME et al. can not possibly be viewed as anticipating any of the present claims.

Although Appellant believes that the lack of *an aspherical surface having a diffraction lens structure formed thereon* in the system of BROOME et al. clearly warrants the reversal of the rejections based thereon, Appellant also points out the following further distinctions between the claimed subject matter and the disclosure of BROOME et al.

Each of independent claims 1, 6 and 7 sets forth an objective lens which includes *an aspherical surface divided into an effective area and an outer area outside the effective area, wherein a light beam passing through the effective area forms a beam spot, and a light beam passing through the outer area is diffused.* For instance, claim 1 recitess, inter alia, "at least one surface of said objective lens being an aspherical surface, said at least one surface being divided into an effective area and an outer area outside said effective area, . . . the light beam passed through said effective area forming a beam spot on a predetermined surface, the light beam passed through said outer area being diffused on the predetermined surface in comparison with the beam spot"; claim 6 recites, inter alia, "at least one surface of said objective lens being an aspherical surface, said at least one surface being divided into an effective area and an outer area outside said effective area, . . . said effective area and said outer area being formed such that the light beam passed through said effective area forming a beam spot on a predetermined surface, the light beam passed through said outer area being diffused on the predetermined surface"; and claim 7 recites, inter alia, "at least one surface of said objective lens comprising an

aspherical surface, said at least one surface being divided into an effective area and an outer area outside said effective area, . . . said effective area and said outer area being configured such that a light beam passing through said effective area forms a beam spot on a predetermined surface, the light beam passing through said outer area being diffused on the predetermined surface".

Appellant submits that BROOME et al. lacks any disclosure of *an aspherical surface divided into an effective area and an outer area outside the effective area, wherein a light beam passing through the effective area forms a beam spot, and a light beam passing through the outer area is diffused.*

In the Final Rejection, paragraph 7 (Response to Arguments), the Examiner asserted that area 26 of Broome et al. is the outer area (Page 8, line 1). Appellant notes that the zones 25 and 26 of BROOME et al. are both part of the *effective area*, insofar as that term is defined and used throughout the present disclosure. While Appellant acknowledges that limitations must not be read into the claims from the specification, it is likewise true that claim terminology must be read in the context of the disclosure of which it is a part in order to properly define the scope and meaning of the claims. The term *effective area* is used throughout the present disclosure to refer to that portion of the lens surface through which light which forms a beam spot passes during normal use of the objective lens, while the term *outer area* is used throughout the present disclosure to refer

to that portion of the lens surface which is outside of the effective area (i.e., light passing therethrough does not form part of a beam spot during normal use of the objective lens). However, light which forms a beam spot passes through both zones 25 and 26 of BROOME et al. during normal use of the objective lens.

Rather than defining an *effective area* and *outer area* of the lens surface, the zones 25 and 26 of BROOME et al. are instead comparable to the common area RC and exclusive area RE discussed in the present disclosure (note Figures 1A and 1B). For CD format disks, a beam spot is formed by relatively longer wavelength light, with a relatively smaller NA, which passes through zone 25 of BROOME et al. and common area RC of the present disclosure. For DVD format disks, a beam spot is formed by relatively shorter wavelength light, with a relatively larger NA, which passes through both zones 25 and 26 of BROOME et al., and both common area RC and exclusive area RE of the present disclosure. However, it is clear that zone 26 of BROOME et al. does not constitute an *outer area* as recited in the claims, since at least the relatively shorter wavelength light passes therethrough, without being *diffused*, to form part of the beam spot during use for DVD format disks. Accordingly, it is clear that zone 26 of BROOME et al. should instead be considered part of the *effective area* of the lens surface.

Accordingly, Appellant submits that BROOME et al. lacks any disclosure of *an aspherical surface divided into an effective area and an outer area outside the effective*

area, wherein a light beam passing through the effective area forms a beam spot, and a light beam passing through the outer area is diffused, and that therefore BROOME et al. can not possibly be viewed as anticipating any of the present claims.

Each of independent claim 1 and dependent claim 10 sets forth an objective lens having *a predetermined gap provided between a spherical aberration of a light beam passing through an effective area and a spherical aberration of a light beam passing through an outer area.* For instance, claim 1 includes, inter alia, "said effective area and said outer area being formed such that a predetermined gap is caused between a spherical aberration of a light beam passed through said effective area and a spherical aberration of a light beam passed through said outer area"; and claim 10 includes, inter alia, "said outer area being configured such that a predetermined gap is provided between a spherical aberration of the light beam passing through said effective area and a spherical aberration of a light beam passing through said outer area".

Appellant submits that BROOME et al. lacks any disclosure of *a predetermined gap provided between a spherical aberration of a light beam passing through an effective area and a spherical aberration of a light beam passing through an outer area.*

Regardless of whether there is any change in spherical aberration between the zones 25 and 26 of BROOME et al., as the Examiner contends, there is clearly no disclosure in BROOME et al. that there is a predetermined gap between spherical

aberration of light passing through zone 26 and spherical aberration of light passing through an *outer area* outside of zone 26, as recited in claims 1 and 10. As noted in the present disclosure, this provision of such a gap between spherical aberrations avoids the need to provide a separate aperture stop member.

Accordingly, Appellant submits that BROOME et al. lacks any disclosure of *a predetermined gap provided between a spherical aberration of a light beam passing through an effective area and a spherical aberration of a light beam passing through an outer area*, and that therefore BROOME et al. can not possibly be viewed as anticipating any of the present claims.

Appellant submits that dependent claims 2, 8 and 10, which are at least patentable due to their dependency from claims 1 and 7 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record.

For at least all of the above reasons, Appellant submits that the rejection of claims 1, 2, 6-8 and 10 under 35 U.S.C. §102(b) is inappropriate and unsupported by the teachings of BROOME et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 1, 2, 6-8 and 10 under 35 U.S.C. §102(b) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over BROOME et al. and for an early allowance of claims 1-12 on appeal.

The rejection of claims 3, 4, 11 and 12 Under 35 U.S.C. §103(a) over BROOME et al. (U.S. Patent No. 6,088,322) is Improper, thus the Decision to Reject Claims 3, 4, 11 and 12 on this Ground Should be Reversed, and the Application Should be Remanded to the Examiner for allowance.

In the Final Official Action of September 20, 2002, the Examiner rejected claims 3, 4, 11 and 12 under 35 U.S.C. §103(a) over BROOME et al.

Appellant submits that dependent claims 3, 4, 11 and 12, which are at least patentable due to their dependency from claims 1 and 7 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record. Claims 3 and 11 each recite, "wherein an absolute value of said gap is equal to or greater than 10 micrometers." Claims 4 and 12 each recite, "wherein an absolute value of said predetermined gap is approximately 200 micrometers."

The Examiner states the position that selecting the specific recited absolute values of spherical aberration gap would have been an obvious exercise in discovering an optimum value of a result effective variable. Appellant submits that the Examiner's assertion of obviousness is inappropriate, particularly where, as here, the primary reference does not disclose any spherical aberration gap whatsoever. The Examiner's assertion of obviousness as related to optimum values applies only in a situation where it is known in the prior art that the parameter that is being optimized is a significant

parameter. In the present situation, this is not true and thus the Examiner's reliance on *In re Boesch* is misplaced.

For at least all of the above reasons, Appellant submits that the rejection of claims 3, 4, 11 and 12 under 35 U.S.C. §103(a) is inappropriate and unsupported by the teachings of BROOME et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 3, 4, 11 and 12 under 35 U.S.C. §103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over BROOME et al. and for an early allowance of claims 1-12 on appeal.

The rejection of claims 1, 2 and 5-10 Under 35 U.S.C. §102(b) over YOO et al. (U.S. Patent No. 6,043,912) is Improper, thus the Decision to Reject Claims 1, 2 and 5-10 on this Ground Should be Reversed, and the Application Should be Remanded to the Examiner for allowance.

In the Final Official Action of September 20, 2002, the Examiner rejected claims 1, 2 and 5-10 under 35 U.S.C. §102(b) over YOO et al.

As noted above, each of independent claims 1, 6 and 7 sets forth an objective lens which includes *an aspherical surface having a diffraction lens structure formed thereon.* Appellant submits that YOO et al. lacks any disclosure of *an aspherical surface having a diffraction lens structure formed thereon.*

The disclosure of YOO et al. is, for the most part, directed to embodiments in which a holographic ring lens 35 is provided separately from an objective lens 36. Figure 7 of YOO et al. depicts the only embodiment in which a holographic ring structure is formed integrally on a surface of an objective lens. However, Appellant submits there no disclosure in YOO et al. that the holographic ring structure is formed on an *aspherical surface* of the objective lens. Contrary to the Examiner's position, Figure 7 does not clearly show an aspherical surface upon which the holographic ring structure is formed. In fact, Figure 7 appears to depict that the surface upon which the holographic ring structure is formed as spherical, particularly in comparison to the shape of the lens surfaces of objective lens 36 as depicted in Figures 3 and 4A. However, it is at least clear that there is no explicit teaching in YOO et al. that the objective lens surface upon which the holographic ring structure is formed is *aspherical*. Further, the lack of explicit disclosure of this feature in YOO et al. does not authorize the Examiner to impute it into the drawing.

Accordingly, Appellant submits that YOO et al. lacks any disclosure of *an aspherical surface having a diffraction lens structure formed thereon*, and that therefore YOO et al. can not possibly be viewed as anticipating any of the present claims.

Although Appellant believes that the lack of *an aspherical surface having a diffraction lens structure formed thereon* in the system of YOO et al. clearly warrants the

reversal of the rejections based thereon, Appellant also points out the following further distinctions between the claimed subject matter and the disclosure of YOO et al.

As noted above, each of independent claims 1, 6 and 7 sets forth an objective lens which includes *an aspherical surface divided into an effective area and an outer area outside the effective area, wherein a light beam passing through the effective area forms a beam spot, and a light beam passing through the outer area is diffused.* Appellant submits that YOO et al. lacks any disclosure of *an aspherical surface divided into an effective area and an outer area outside the effective area, wherein a light beam passing through the effective area forms a beam spot, and a light beam passing through the outer area is diffused.*

Appellant notes that the regions 353 and 355 of YOO et al. are both part of the *effective area*, insofar as that term is defined and used throughout the present disclosure. While Appellant acknowledges that limitations must not be read into the claims from the specification, it is likewise true that claim terminology must be read in the context of the disclosure of which it is a part in order to properly define the scope and meaning of the claims. As noted above, the term *effective area* is used throughout the present disclosure to refer to that portion of the lens surface through which light which forms a beam spot passes during normal use of the objective lens, while the term *outer area* is used throughout the present disclosure to refer to that portion of the lens surface which is

outside of the effective area (i.e., light passing therethrough does not form part of a beam spot during normal use of the objective lens). However, light which forms a beam spot passes through both regions 353 and 355 of YOO et al. during normal use of the objective lens.

Rather than defining an *effective area* and *outer area* of the lens surface, the regions 353 and 355 of YOO et al. are instead comparable to the common area RC and exclusive area RE discussed in the present disclosure (note Figures 1A and 1B). For CD format disks, a beam spot is formed by relatively longer wavelength light, with a relatively smaller NA, which passes through region 353 of YOO et al. and common area RC of the present disclosure. For DVD format disks, a beam spot is formed by relatively shorter wavelength light, with a relatively larger NA, which passes through both regions 353 and 355 of YOO et al., and both common area RC and exclusive area RE of the present disclosure. However, it is clear that region 355 of YOO et al. does not constitute an *outer area* as recited in the claims, since at least the relatively shorter wavelength light passes therethrough, without being *diffused*, to form part of the beam spot during use for DVD format disks. Accordingly, it is clear that region 355 of YOO et al. should instead be considered part of the *effective area* of the lens surface.

Accordingly, Appellant submits that YOO et al. lacks any disclosure of *an aspherical surface divided into an effective area and an outer area outside the effective*

area, wherein a light beam passing through the effective area forms a beam spot, and a light beam passing through the outer area is diffused, and that therefore YOO et al. can not possibly be viewed as anticipating any of the present claims.

As noted above, each of independent claim 1 and dependent claim 10 sets forth an objective lens having *a predetermined gap provided between a spherical aberration of a light beam passing through an effective area and a spherical aberration of a light beam passing through an outer area.* Appellant submits that YOO et al. lacks any disclosure of *a predetermined gap provided between a spherical aberration of a light beam passing through an effective area and a spherical aberration of a light beam passing through an outer area.*

Further, regardless of whether there is any change in spherical aberration between the regions 353 and 355 of YOO et al., as the Examiner contends, there is clearly no disclosure in YOO et al. that there is a predetermined gap between spherical aberration of light passing through region 355 and spherical aberration of light passing through an *outer area* outside of region 355, as recited in claims 1 and 10. As noted in the present disclosure, this provision of such a gap between spherical aberrations avoids the need to provide a separate aperture stop member.

Accordingly, Appellant submits that YOO et al. lacks any disclosure of *a predetermined gap provided between a spherical aberration of a light beam passing*

through an effective area and a spherical aberration of a light beam passing through an outer area, and that therefore YOO et al. can not possibly be viewed as anticipating any of the present claims.

Appellant submits that dependent claims 2, 5 and 8-10, which are at least patentable due to their dependency from claims 1 and 7 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record.

For at least all of the above reasons, Appellant submits that the rejection of claims 1, 2 and 5-10 under 35 U.S.C. §102(b) is inappropriate and unsupported by the teachings of YOO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 1, 2 and 5-10 under 35 U.S.C. §102(b) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over YOO et al. and for an early allowance of claims 1-12 on appeal.

The rejection of claims 3, 4, 11 and 12 Under 35 U.S.C. §103(a) over YOO et al. (U.S. Patent No. 6,043,912) is Improper, thus the Decision to Reject Claims 3, 4, 11 and 12 on this Ground Should be Reversed, and the Application Should be Remanded to the Examiner for allowance.

In the Final Official Action of September 20, 2002, the Examiner rejected claims 3, 4, 11 and 12 under 35 U.S.C. §103(a) over YOO et al.

Appellant submits that dependent claims 3, 4, 11 and 12, which are at least patentable due to their dependency from claims 1 and 7 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record. As noted above, claims 3 and 11 each recite, "wherein an absolute value of said gap is equal to or greater than 10 micrometers." As noted above, claims 4 and 12 each recite, "wherein an absolute value of said predetermined gap is approximately 200 micrometers."

The Examiner states the position that selecting the specific recited absolute values of spherical aberration gap would have been an obvious exercise in discovering an optimum value of a result effective variable. Appellant submits that the Examiner's assertion of obviousness is inappropriate, particularly where, as here, the primary reference does not disclose any spherical aberration gap whatsoever. The Examiner's assertion of obviousness as related to optimum values applies only in a situation where it is known in the prior art that the parameter that is being optimized is a significant parameter. In the present situation, this is not true and thus the Examiner's reliance on *In re Boesch* is misplaced.

For at least all of the above reasons, Appellant submits that the rejection of claims 3, 4, 11 and 12 under 35 U.S.C. §103(a) is inappropriate and unsupported by the teachings of YOO et al. Therefore, Appellant respectfully requests that the decision of

the Examiner to finally reject claims 3, 4, 11 and 12 under 35 U.S.C. §103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over YOO et al. and for an early allowance of claims 1-12 on appeal.

(9) **CONCLUSION**

Claims 1, 2, 6-8 and 10 are patentable under 35 U.S.C. §102(b) over BROOME et al. Specifically, BROOME et al. lacks any disclosure of the following claimed features:

- *an aspherical surface having a diffraction lens structure formed thereon*; and

-an aspherical surface divided into an effective area and an outer area outside the effective area, wherein a light beam passing through the effective area forms a beam spot, and a light beam passing through the outer area is diffused; and

-a predetermined gap provided between a spherical aberration of a light beam passing through an effective area and a spherical aberration of a light beam passing through an outer area.

Claims 3, 4, 11 and 12 are patentable under 35 U.S.C. §103(a) over BROOME et al. Specifically, BROOME et al. lacks any disclosure of the above-noted subject matter recited in claims 1 and 7. Further, it would not have been obvious to one of ordinary skill in the art to provide a spherical aberration gap having an absolute value equal to or greater than 10 micrometers, as recited in claims 3 and 11, in the system of BROOME et al. Further, it would not have been obvious to one of ordinary skill in the art to provide a

spherical aberration gap having an absolute value of approximately 200 micrometers, as recited in claims 4 and 12, in the system of BROOME et al.

Claims 1, 2 and 5-10 are patentable under 35 U.S.C. §102(b) over YOO et al. Specifically, YOO et al. lacks any disclosure of the following claimed features:

- *an aspherical surface having a diffraction lens structure formed thereon*;

-*an aspherical surface divided into an effective area and an outer area outside the effective area, wherein a light beam passing through the effective area forms a beam spot, and a light beam passing through the outer area is diffused*; and

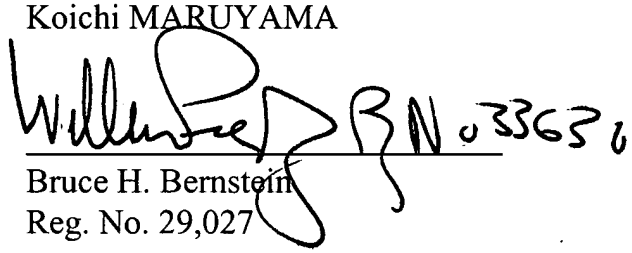
-*a predetermined gap provided between a spherical aberration of a light beam passing through an effective area and a spherical aberration of a light beam passing through an outer area.*

Claims 3, 4, 11 and 12 are patentable under 35 U.S.C. §103(a) over YOO et al. Specifically, YOO et al. lacks any disclosure of the above-noted subject matter recited in claims 1 and 7. Further, it would not have been obvious to one of ordinary skill in the art to provide a spherical aberration gap having an absolute value equal to or greater than 10 micrometers, as recited in claims 3 and 11, in the system of YOO et al. Further, it would not have been obvious to one of ordinary skill in the art to provide a spherical aberration gap having an absolute value of approximately 200 micrometers, as recited in claims 4 and 12, in the system of YOO et al.

Accordingly, Appellant respectfully requests that the Board reverse the decision of the Examiner to reject claims 1, 2 and 5-10 under 35 U.S.C. §102(b), and the decision of the Examiner to reject claims 3, 4, 11 and 12 under 35 U.S.C. §103(a), and to remand the application to the Examiner for allowance.

Thus, Appellant respectfully submits that each and every pending claim of the present application meets the requirement for patentability under 35 U.S.C. §§102(b) and 103(a), and that the present application and each pending claim are allowable over the prior art of record.

Respectfully submitted,
Koichi MARUYAMA



Bruce H. Bernstein
Reg. No. 29,027

May 19, 2003
GREENBLUM & BERNSTEIN, P.L.C.
1950 Roland Clarke Place
Reston, VA 20191
(703) 716-1191

APPENDIX A

1. An objective lens for an optical pick-up, at least one surface of said objective lens being an aspherical surface, said at least one surface being divided into an effective area and an outer area outside said effective area, said effective area and said outer area being formed such that a predetermined gap is caused between a spherical aberration of a light beam passed through said effective area and a spherical aberration of a light beam passed through said outer area, a diffraction lens structure being formed on said at least one surface within said effective area, said outer area being connected with a base curve which is a macroscopic shape of said at least one surface within said effective area, the light beam passed through said effective area forming a beam spot on a predetermined surface, the light beam passed through said outer area being diffused on the predetermined surface in comparison with the beam spot.

2. The objective lens according to claim 1, said diffraction lens structure including a plurality of concentric annular zones formed on said at least one surface.

3. The objective lens according to claim 2, wherein an absolute value of said gap is equal to or greater than 10 micrometers.

4. The objective lens according to claim 3, wherein an absolute value of said gap is approximately 200 micrometers.

5. The objective lens according to claim 1, wherein said at least one surface in said outer area is a continuous surface having no diffraction lens structure.

6. An objective lens for an optical pick-up, at least one surface of said objective lens being an aspherical surface, said at least one surface being divided into an effective area and an outer area outside said effective area, a diffraction lens structure being formed on said at least one surface within said effective area, said outer area being connected with a base curve which is a macroscopic shape of said at least one surface within said effective area, said effective area and said outer area being formed such that the light beam passed through said effective area forming a beam spot on a predetermined surface, the light beam passed through said outer area being diffused on the predetermined surface.

7. An objective lens for an optical pick-up, at least one surface of said objective lens comprising an aspherical surface, said at least one surface being divided into an effective area and an outer area outside said effective area, said at least one surface within said effective area comprising a diffraction lens structure, a surface of said outer area having a curve with a macroscopic shape of said at least one surface within said effective area, said effective area and said outer area being configured such that a light beam passing through said effective area forms a beam spot on a predetermined surface, the light beam passing through said outer area being diffused on the predetermined surface.

8. The objective lens according to claim 7, said diffraction lens structure comprising a plurality of concentric annular zones formed on said at least one surface.

9. The objective lens according to claim 8, said outer area comprising a continuous surface without a diffraction lens structure.

10. The objective lens according to claim 7, said outer area being configured such that a predetermined gap is provided between a spherical aberration of the light beam passing through said effective area and a spherical aberration of a light beam passing through said outer area.

11. The objective lens according to claim 10, wherein an absolute value of said predetermined gap is at least equal to 10 micrometers.

12. The objective lens according to claim 10, wherein an absolute value of said predetermined gap is approximately 200 micrometers.